

STORMWATER MANAGEMENT

For municipalities, there are two major areas of concern regarding the management of watersheds and stormwater: quality of runoff and the volume of stormwater to be accommodated. Each of these issues has unique requirements and can present special challenges for cities.

In 1987 the Clean Water Act was amended to require the Environmental Protection Agency (EPA) to develop regulations for storm water discharges from industrial activities. The intent of these regulations is to improve water quality by reducing or eliminating contamination in stormwater. Stormwater can include runoff from precipitation, surface, drainage, or snow melt. In Iowa, the Department of Natural Resources (DNR) has been designated by the EPA to administer permits under the federal National Pollutant Discharge Elimination System (NPDES) program.

Permits are required for any construction activity that disturbs one acre or more. Each such project must also have a Storm Water Pollution Prevention Plan (SWPPP). The Natural Resources Conservation Service (NRCS) can provide useful advice in developing and implementing these plans. In addition, forty-five cities and the two largest universities are required to have permits for their Municipal Separate Storm Sewer Systems (MS4s). These cities and universities are required to

- control erosion and sedimentation from construction sites,
- improve storm water management to control flooding and protect water quality,
- inspect storm drain outlets to identify undesirable discharges,
- implement good practices to ensure operations do not degrade water quality,
- provide public education about issues such as household contribution to poor water quality, and
- institute public participation in a plan to improve that quality.

In addition to the NRCS, the DNR, and Iowa Statewide Urban Design and Specifications (SUDAS) are excellent sources of information and advice on this subject.

SUDAS is cooperating with the Iowa Stormwater Management Partnership, which includes the IDNR, NRCS, and Iowa Association of Municipal Utilities (IAMU), and others to develop design guidelines and specifications for construction site erosion control and stormwater quality maintenance and improvement for developments. These guidelines and specifications will be incorporated into the SUDAS manuals for local jurisdiction use.

Stormwater utilities have been established in several Iowa communities to provide a funding source for NPDES stormwater mandates. In addition, many cities have adopted stormwater management ordinances. Information about this topic can be found on the IAMU website, www.iamu.org.

Managing rapid runoff in developments is a common concern in many expanding communities. Erosion damage and silt deposit can result from inadequately designed developments and often cities are requested to find solutions to these problems. Strategies have been devised to address erosion concerns in development areas and excellent results have been shown. Low Impact Development techniques such as bioswales, infiltration trenches, and native landscaping can be explained by the NRCS. Other erosion control measures might include filter strips, sediment basins, rock check dams, and silt fences.

Controlling volume and velocity of storm runoff is an important issue in many communities, with principal goals of preventing damage and reducing erosion. Use of detention and storage can allow for a reduced release rate for stormwater to minimize the undesirable effects of excessive and rapid runoff. Costs of these facilities must be balanced against potential public

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benefit. Restrictive covenants, easements, or other property rights may be needed, but careful planning is mandatory to avoid shifting problems in one area to another. The SUDAS design manual contains valuable guidelines and recommendations for controlling the rate of stormwater runoff. Included in the SUDAS manual are such specific topics as preparation of a drainage report for projects, determination of runoff volumes, design of storm sewers, culverts, open ditches, and appurtenances, and recommendations for use of detention facilities to reduce the runoff rate and improve water quality, as well as possibly lower overall drainage costs. The manual also discusses use of easements for storm sewers, presents several useful forms for that purpose, and describes required permits for waterways and wetlands.